



Chesterfield County, Virginia

Department of Building Inspection

9800 Government Center Pkwy – P.O. Box 40 – Chesterfield, VA 23832-0040
Phone: (804) 748-1057 phone – Fax: (804) 717-6080 fax – Internet: chesterfield.gov

WILLIAM D. DUPLER
Building Official

Structural Plan Design Load Information Required for New Construction and Additions to existing Buildings

The following checklist contains the structural load information required on all plans prior to processing the building permit application. Please address any questions to the commercial plan review staff at 748-1057. Per VUSBC part 1 Construction Code section 109.3 Engineering Details and IBC 1603 Construction Documents, provide on the plans:

General

- Floor live load(s) including concentrated load(s).
- Roof live load(s).
- Rain load including the s_d and s_h used for calculation per IBC 1611 when water accumulation is possible.

Roof snow load

- Flat roof snow load, P_f or sloped roof snow load P_s per slopes over 5 degrees.
- Snow exposure factor, C_e .
- Snow load importance factor, I .
- Thermal factor, C_t .

Wind design data

- Basic wind speed (per 3 second gust).
- Wind Importance factor and occupancy category.
- Wind exposure. Where more than one wind exposure is utilized, the wind exposure and applicable wind direction shall be indicated.
- The applicable internal pressure coefficient.
- Components and cladding. The design wind pressures in terms of psf to be used for the design of exterior component and cladding materials not specifically designed by the structural engineer.

Earthquake design data

- Seismic importance factor, I , and occupancy category.
- Mapped spectral responses S_s and S_1 .
- Site class.
- Spectral response coefficients, S_d s and S_d1 .
- Seismic design category.
- Basic seismic-force-resisting system(s).
- Design base shear.
- Seismic response coefficient(s), C_s .
- Response modification factor(s), R .
- Analysis procedure used

Component bracing: Provide on the plans the component importance factors per ASCE 7-05. If architectural, mechanical, electrical, process equipment or life safety equipment must have bracing designed to withstand seismic forces per ASCE 7-05 then it must be so noted. If the component bracing plans are not to be included with the structural plans and will be designed by the architect and or the PME system designers then note such on the structural code notes and the general architectural notes. The other designers need to know what they are responsible for designing.

Wood frame construction: Per IBC 2305 note on the plans, which walls or portions of walls are to be used as shear walls and provide on the plans, the required nailing schedules and panel connection details.

Concrete construction: Per IBC 1901.4 if the construction involves the use of concrete the construction documents shall include the following information:

- The specified compressive strength of concrete at the stated ages or stages of construction for which each concrete element is designed.
- The specified strength or grade of reinforcement.
- The size and location of structural elements, reinforcement, and anchors.
- Provision for dimensional changes resulting from creep, shrinkage and temperature.
- The magnitude and location of pre-stressing forces.
- Anchorage length of reinforcement and location and length of lap splices.
- Type and location of mechanical and welded splices of reinforcement.
- Details and location of contraction or isolation joints specified for plain concrete.
- Minimum concrete compressive strength at time of post-tensioning.
- Stressing sequence for post-tensioning tendons.
- For structures assigned to Seismic Design Category D, E or F, a statement if slab on grade is designed as a structural diaphragm (see Section 21.10.3.4 of ACI 318).

Masonry construction: Per IBC 2101.3 if the construction involves the use of masonry the construction documents shall include the following information:

- Specified size, grade, type and location of reinforcement, anchors and wall ties.
- Reinforcing bars to be welded and welding procedure.
- Size and location of structural elements.
- Provisions for dimensional changes resulting from elastic deformation, creep, shrinkage, temperature and moisture.

Steel Joist construction: Per IBC 2206.2 if the construction involves the use of steel joists the construction documents shall include the following information:

- Steel joist and girder designations per SJI specifications.
- Requirements for design, layout, end support, anchorage, bridging, bridging termination connections, bearing connections to resist uplift and lateral loads.
- Special loads including: concentrated loads, non-uniform loads, net uplift loads, axial loads, end moments, connection forces.
- Special consideration for nonstandard joist and girder configuration profiles, oversized or non-standard web openings, extended ends.
- Deflection criteria for live and total loads for non-SJI-standard joists.

Conventional light frame construction provisions:

If the building is to be constructed in accordance with the conventional light frame construction provisions of section 2308 provide on the plans:

- Floor and roof live loads.
- Ground snow loads, Pg.
- Basic wind speed (3-second gust) in miles per hour and the wind exposure factor.
- Seismic Design Category and Site Class.
- Locations of braced wall lines per IBC 2308.3.
- Locations of braced wall panels per IBC 2308.9.3.
- The method of constructing the braced wall panels per 2308.9.3 (reference the method, 1-8, outlined in section 2308.9.3)